

Translation

PATENT COOPERATION TREATY
PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 04-3/TEPL	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/RU2004/000222	International filing date (day/month/year) 03.06.2004	Priority date (day/month/year) 03.06.2003	
International Patent Classification (IPC) or national classification and IPC			
<p>Applicant KURKAEV, Abdul Sultanovich</p>			

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of _____ sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																								
<p>4. This report contains indications relating to the following items:</p> <table> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </tbody> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/RU	Authorized officer
Facsimile No.	Telephone No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

international search (Rule 12.3 and 23.1(b))
 publication of the international application (Rule 12.4)
 international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

the international application as originally filed/furnished
 the description:
 pages _____ as originally filed/furnished
 pages* _____ received by this Authority on _____
 pages* _____ received by this Authority on _____

the claims:
 nos. _____ as originally filed/furnished
 nos.* _____ as amended (together with any statement) under Article 19
 nos.* _____ received by this Authority on _____
 nos.* _____ received by this Authority on _____

the drawings:
 sheets _____ as originally filed/furnished
 sheets* _____ received by this Authority on _____
 sheets* _____ received by this Authority on _____

a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. The amendments have resulted in the cancellation of:

the description, pages _____
 the claims, nos. _____
 the drawings, sheets/figs _____
 the sequence listing (*specify*): _____
 any table(s) related to sequence listing (*specify*): _____
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages _____
 the claims, nos. _____
 the drawings, sheets/figs _____
 the sequence listing (*specify*): _____
 any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1	YES
	Claims		NO
Inventive step (IS)	Claims	1	YES
	Claims		NO
Industrial applicability (IA)	Claims	1	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents cited in the search report:

D1: RU 2140365 C1

D2: SU 688351 A

D3: RU 2047069 C1

D4: RU 2095125 C1

D1 is the prior art closest by the combination of essential features to independent claim 1.

A method is known from D1 (claims, figure 1) for heating or cooling a flowing medium, including feeding the flowing medium to be cooled or heated into a through channel and sequentially heating or cooling the flowing medium in at least two stages, and also increasing the temperature of each stage in a direction from the first stage to the subsequent stage in case of heating, or reducing the temperature in case of cooling.

A method is known from D2 for heating or cooling a flowing medium, including feeding a flowing medium to be cooled or heated into a through channel and sequentially heating or cooling the flowing medium in at least two stages, and also increasing the temperature of each stage

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Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

in a direction from the first stage to the subsequent stage in case of heating, or reducing the temperature in the case of cooling.

A method is known from D3 for cooling a flowing medium, including feeding a flowing medium to be cooled into a through channel and sequentially cooling the flowing medium in the through channel in at least two stages of equal length, and also reducing the temperature of the stages in a direction from the first to subsequent stages.

A method is known from D4 (claims, figure 1) for cooling a flowing medium, including feeding the flowing medium to be cooled into a through channel and cooling the flowing medium in the through channel. It is also known from D4 to feed a medium to be heated into a through channel tangentially at an angle to the generatrix of the inner surface of said channel at the point the flowing medium is introduced.

The examiner has concluded that from the documents cited it is not known to embody a through channel divided into heating stages of equal length, nor is it known to increase the temperature of each stage abruptly and in direct proportion in a direction from the first stage to the subsequent stage in case of heating, nor to reduce the temperature abruptly and in direct proportion in case of cooling, nor is it known to feed a medium to be heated into a through channel tangentially an angle of between 45 and 90 degrees to the generatrix of the inner surface of said channel at the point the flowing medium is

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introduced.

As claimed by the applicant, these features allow an approximately even temperature differential to be maintained along the channel between the heating and cooling source and the flowing medium, which during agitation of the flowing medium flow by whirling of the medium at the inlet to the through channel allows the temperature of the flowing medium to be equalised in cross section when heating or cooling thereof is steady and sequential.

Therefore the invention in respect of independent claim 1 meets the requirements of novelty and inventive step.

The claimed invention also meets the requirement of industrial applicability.